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(54) Flexible package having slider closure

(57) A reclosable, flexible package (10) is made from a sheet (100) of film material folded to form overlying panels (12, 14). A slider fastener assembly (110) is secured to one of the panels (12) and has a predetermined length to avoid conflict with side seals (68) joining

the panels (12, 14) together. A line of weakness (106) is formed in the panels (12, 14) so as to be positioned below the fastener tracks (26, 28). The fastener tracks (26, 28) are secured to the package panels (12, 14) using fastener track flanges (27, 29) of minimal height.

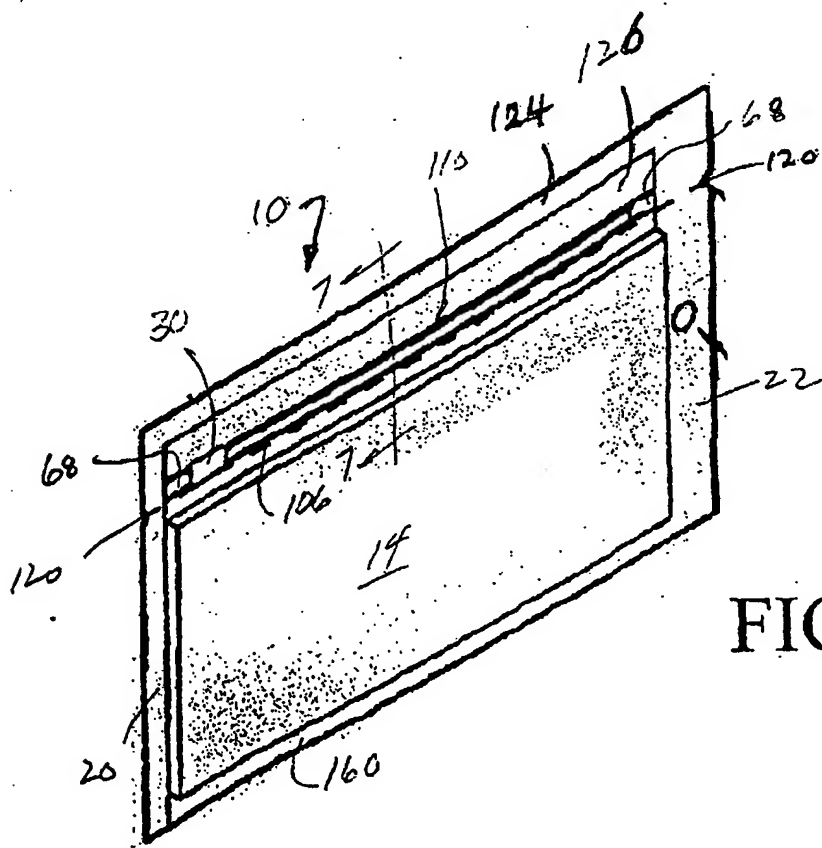


FIG. 1

## Description

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

[0001] The present invention pertains to flexible packages, such as plastic bags, and in particular to such packages having fastener closures employing sliders.

#### 2. Description Of The Related Art

[0002] With the recent emphasis in providing consumers with bulk quantities of various commodities, such as food products, reclosable packages have become increasingly popular. One of the most popular means of providing reclosability is to employ fasteners of various types, particularly fasteners which are compatible with flexible packages of plastic film construction. Manufacturers of food products and other commodities are concerned with filling the contents of a flexible package as quickly and economically as possible. It is important that the opening provided by the fastener be made as large as practically possible. Consumers or other end users also prefer large sized openings for easy extraction of products from the package interior. Even with large openings, however, products within the package may interfere with fastener operation when the product poured or otherwise dispensed from the package becomes entrained in the fastener components.

[0003] Other improvements to flexible reclosable packages are being sought. For example, when handling products comprised of numerous small pieces, such as shredded cheese or cereal, for example, it is generally desirable to have the package formed into a pouch which is open at one end, or along one side, so as to allow the product to be poured or shaken through the reclosable opening. It is desirable that the product be allowed to freely flow past the reclosable opening. Preferably, the path taken by the product within the package should be made as smooth as possible.

[0004] Although improvements have been made in the art of plastic welding and joining, manufacturers of consumer products employing high speed production techniques are continually seeking improved package forming methods and equipment. Concern has been focused on the formation of stop members which limit the travel of a sliding closure traveling along fastener tracks. Any reduction in the time needed to form these and other package features can result in substantial cost savings.

#### SUMMARY OF THE INVENTION

[0005] An object of the present invention is to provide a shrouded reclosable package having improved arrangements for automatically filling.

[0006] Yet another object of the present invention is to provide a shrouded reclosable plastic package having

a slider fastener with improved snug fit with the package contents in a manner which also optimizes material usage for the package.

[0007] A further object of the present invention is to provide a shrouded plastic bag having a slider fastener with an improved end seal of the fastener tracks.

[0008] These and other objects of the present invention are attained in a reclosable flexible package comprising opposed front and rear panels that have sides joined together to form an interior and a package opening communicating with said interior. The reclosable flexible package has first and second interlockable fastener tracks configurable in an interlocked, closed position and an unlocked open position. It has a slider movable along fastener tracks to configure tracks in interlocked position to close opening and to configure fastener tracks in unlocked position so as to allow access through opening to package interior. The fastener tracks have opposed ends located adjacent, opposed sides of front and rear panels. The stops adjacent the ends of the fastener tracks interfere with and prevent travel of slider beyond fastener tracks. In operation, the fastener tracks are provided in a mated or closed position and are tacked in position as a unitary subassembly, on one of the front or rear panels. Preferably, the front and rear panels are provided as unitary sheet which is folded with one part overlying upon the other to form the opposed front and rear panels. After the fastener tracks are in place, the product is laid on one of the front and rear panels and the remaining panel is folded to overlie the product. The peripheral seals are then formed to hermetically seal the product and the fastener track is securely fastened to the front and rear panels. Preferably, the fastener tracks are within the side seals.

#### BRIEF DESCRIPTION OF THE DRAWINGS

##### [0009]

FIG. 1 is a perspective view of a flexible package according to principles of the present invention; FIG. 2 shows a web supply used in constructing the package;

FIG. 3 shows a mated fastener track with slider used in making the package;

FIG. 4 is a top plan view of a film portion taken from the web illustrated in FIG. 2;

FIG. 5 is a view similar to that of FIG. 4 showing the addition of the fastener track assembly;

FIG. 6 is a view similar to that of FIG. 5 showing placement of a product prior to folding and final sealing of the package;

FIG. 7 is a cross-sectional view taken along the line 7-7 of FIG. 1; and

FIG. 8 is a fragmentary view of an alternative package construction.

## **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

[0010] Referring now to the drawings, a flexible package illustrating principles of the present invention is generally indicated at 10. Flexible package 10 preferably comprises a plastic bag having front and back panels 12, 14 joined together at the left end by a side seal 20 and at the right end by a side seal 22. Side seals 20, 22 are preferably of conventional conduction heat-sealed construction. The side seals could have a generally constant width throughout or the width could be reduced at a point adjacent the ends of the fastener tracks which will be discussed herein. Preferably, panels 12, 14 comprise folded portions of an integral film or sheet 100 illustrated in FIG. 4. With reference to FIG. 2, sheet 100 is severed from a continuous web or roll of material 102.

[0011] As mentioned, flexible package 10 preferably comprises a bag having panels 12, 14 formed from plastic film or sheet material. The sheet material can be of a single material type, such as polyolefin materials including polyethylene and polypropylene, but preferably comprises a laminate assembly of several different material types, as is known in the art to provide a barrier to moisture as well as certain gases, such as oxygen or inert fillers of the types used with food products. Other types of laminate films, such as those known in the art to preserve food freshness, may be employed. Where the contents of the flexible package are not perishable or where other considerations may dictate, the panels 12, 14 can be constructed without regard to gas or vapor barrier properties.

[0012] As mentioned with reference to FIG. 4, the film sheet is folded about fold line 114. Initially, the bottom portion of package 10 is terminated at a dead fold, in order to provide the preferred tight fit with the enclosed product. Optionally, the panels 12, 14 may be joined together at their bottom ends by a bottom seal 160 (see FIG. 1) extending between side seals 20, 22, as is known in the art.

[0013] The upper end of flexible package 10 features a reclosable opening including a slide fastener arrangement 110 which includes mating fastener tracks 26, 28 and a slider 30, all preferably of polyolefin material. The slider 30 is slidable along the fastener tracks, causing the fastener tracks to interlock or mate for closure of the flexible package and to unmate or separate to open the flexible package for access to contents in the package interior.

[0014] Referring to FIGS. 1, 3 and 5, the ends of the fastener tracks are deformed to form stops 68. Preferably, stops 68 are formed by the application of ultrasonically generated heat and pressure to the ends of fastener tracks 26, 28. It has been found that the use of present day conduction heat sealing techniques does not provide the control needed to attain the intricate, close tolerance design of stop members according to principles of the present invention. Further, it has been found that

the use of present day conduction heat sealing techniques immediately adjacent previously formed stop members tends to distort the stop members, oftentimes to an extent rendering the stop members unacceptable from a quality control standpoint.

[0015] Stops 68 are configured for maximum efficiency, having the smallest front elevational surface area (i.e., the surface area visible in FIGS. 1 and 3, for example) which is adequate for containing slider 30 on the fastener tracks. Further details concerning the construction of end stops 68 may be found in U.S. Patent Application Publication No. US 2002/0154836 A1.

[0016] With reference to FIG. 7, the fastener tracks 26, 28 include sealing flanges 27, 29 joined to major panels of the package. Further details concerning the fastener assembly 110, including the features of the fastener tracks and sealing flanges thereof may be found in the same United States Patent Application Publication No. US 2002/0154836 A1.

[0017] Referring to FIG. 5, fastener assembly 110 is shown "tacked" into position with respect to sheet 100. As indicated in FIG. 5 the entire closure assembly is installed as a unitary component and is attached to one of the two panels of the package. As can be seen from FIGS. 4 and 5, sheet 100 is preferably formed as a mirror image about fold line 114. Accordingly, if desired, the sheet could be flipped vertically with the panels 12, 14 being replaced, one for the other.

[0018] Referring to FIG. 4, lines of weakness 106 are provided at the top and bottom of sheet 100 and preferably are formed as material is rolled onto supply roll 102. In the completed package, the lines of weakness 106, which are used to separate a shroud portion from the remainder of the package, are located immediately below the fastener assembly 110.

[0019] The fastener assembly 110 is located slightly above the line of weakness 106 of panel 12. When the sheet 100 is folded about fold line 114 in preparation for sealing of the package, the lines of weakness 106 in the panels 12, 14 are interposed one adjacent the other. A notch 120 is formed in the margins of sheet 100 adjacent each end of the lines of weakness 106. Preferably, the lines of weakness 106 are formed by laser score operations performed on the web stored on roll 102, shown in FIG. 2.

[0020] As illustrated in FIG. 1, flexible package 10 includes a shrouded portion 126 formed as an integral extension of panels 12, 14. As can be seen from FIG. 4, for example, shroud portion 126 is comprised of free end portions at the top and bottom of sheet 100. With the panels 12, 14 folded about fold line 114 the free edges are sealed at a top seal 124 of the package (see FIG. 1) which extends between side seals 20, 22. Referring to FIG. 7, flanges 27, 29 of the fastener tracks are shown secured to panels 12, 14. It is preferred that, initially, the fastener assembly is tacked onto the sheet forming the panels 12, 14. At or about the time the peripheral seals are formed, seals between the fastener flanges 27, 29

and the panels 12, 14 is completed. It is generally preferred that the fastener assembly is pre-cut to a predetermined length to ensure that the fastener tracks do not intrude into the area of the side seals. Referring to FIG. 8, the side seals can be recessed or made to have a reduced width in the area immediately adjacent the fastener tracks in order to avoid conflict between the side seals and the fastener tracks. Recessing the side seals is an option made available according to principles of the present invention, but has not been found necessary for the most preferred embodiment of the package.

[0021] Referring to FIG. 1, with the panels 12, 14 folded one against the other and the peripheral seals completed, the package is ready for shipping to an end user. Upon arrival the end user grasps the flexible package 10 and tears the side seals at the notches 120, continuing tearing until the line of weakness 106 is severed allowing the shroud portion to be removed and thereby exposing the fastener assembly 110. With operation of the slider 30 the fastener tracks are separated and access to the package interior and the product contained therein is attained.

[0022] With reference to FIGS. 5 and 7, the sealing flanges 27, 29 for the individual fastener tracks extend into the seal portions 130. Preferably, the package 10 is formed without a peel seal between the sealing flanges of the fastener tracks, and accordingly, the sealing flanges of the fastener tracks remain unattached to one another, being attached only at their outer faces to the respective panels 12, 14. The fastener tracks are coupled to the panels 12, 14 using conduction heat seal tooling, although other techniques could be employed as well.

[0023] Referring again to FIGS. 4 and 5, it can be seen that the right-hand side seal 22 is substantially wider than the opposed side seal 20. This allows the addition of peg holes 140, 142. The peg holes can be formed by punching before or after the side seals are fully formed, it being preferred that the side seals provide a reliable, complete sealing of the panels. As an alternative, the peg holes 140, 142 can be incorporated into the heat seal tooling used to form the side seals 22.

[0024] Referring to FIG. 6, product 150 is shown positioned on panel 12. Flexible package 10 has found immediate application in the field of sliced cheese packaging, but could be used for a variety of other applications such as the packaging of non-flowable products, such as lunchmeat or cheese in the form of molded blocks.

[0025] After the product is placed, the sheet 100 is folded about fold line 114 in the manner indicated by the arrow in FIG. 6 in preparation for a final sealing operation. The individual sealing steps can be carried out in different sequences and can be combined, depending upon the sealing tooling employed. Preferably, sealing of the fastener sealing flanges to the seal areas 130 is completed first to allow a thermal barrier to be inserted between the sealing flanges of the fastener tracks. The side seals and the top seal 124 are then completed. With

flexible packages constructed according to principles of the present invention, a tight package or close fit about product 150 can be attained, even when gas flushing is employed, so as to emulate shrink wrapping.

[0026] With reference to FIG. 1, an optional bottom seal 160 can be added to provide the tight fit. With reference to FIGS. 4-6, the bottom seal 160 of FIG. 1 lies within construction lines 162 of sheet 100. As those skilled in the art will appreciate, the bottom seal 160 is not needed for a hermetic seal of the product because of the dead fold resulting from folding about line 114. The improved tight fitting made possible by the reduced-size of the fastener flanges and other features of the present invention results in less material usage in addition to minimizing head space.

[0027] It can be seen from the above, that the present invention provides an improved flexible package offering a number of manufacturing advantages. Flexible packages according to principles of the present invention employ pre-cut fastener assemblies of predetermined length so as to avoid conflict with side seals of the package. The line of weakness, preferably a laser score line for separating the shroud from the remainder of the package is located below, preferably immediately below the fastener tracks. Packages according to principles of the present invention preferably employ flanges of minimal height.

[0028] The drawings and the foregoing descriptions are not intended to represent the only forms of the invention in regard to the details of its construction and manner of operation. Changes in form and in the proportion of parts, as well as the substitution of equivalents, are contemplated as circumstances may suggest or render expedient, and although specific terms have been employed, they are intended in a generic and descriptive sense only and not for the purposes of limitation, the scope of the invention being delineated by the following claims.

## Claims

### 1. A reclosable flexible package (10) comprising:

a sheet of film material (100) defining a fold line (114) between first and second sheet portions, with said first and said second sheet portions folded in overlying relationship;  
opposed front and rear panels (12, 14) having top edges, bottom edges and a pair of opposed sides joined together to form an interior and a package opening communicating with said interior;  
said front and said rear panels (12, 14) comprising said first and said second sheet portions;  
first and second interlockable fastener tracks (26, 28) configurable in an interlocked, closed

- position and an unlocked open position; a slider (30) movable along said fastener tracks (26, 28) to configure said tracks (26, 28) in said interlocked position so as to close said opening and to configure said fastener tracks (26, 28) in said unlocked position so as to allow access through said opening to said package interior; said fastener tracks (26, 28) located between said top and said bottom of said front and said rear panels (12, 14) and having opposed ends located adjacent said opposed sides of said front and said rear panels (12, 14) and having sealing flanges (27, 29) secured to said front and said rear panels (12, 14), respectively; stops (68) adjacent said ends of said fastener tracks (26, 28) to interfere with and prevent travel of said slider (30) beyond said fastener tracks (26, 28); side seals (20, 22) joining together opposed sides of said front and said rear panels (12, 14); a top seal (124) joining tops of said front and said rear panels (12, 14), extending between said side seals (20, 22); a shroud (126) comprising portions of said front and said rear panels (12, 14) covering said slider (30) and at least the major portion of said fastener tracks (26, 28); weakening portions (106) extending adjacent said fastener tracks (26, 28) for severing of said shroud (126) in preparation for removal of said shroud (126) from the remainder of said reclosable flexible package (10); and a bottom seal (160) joining bottoms of said front and said rear panels (12, 14) adjacent said fold line (114), between said side seals (20, 22).
2. A reclosable flexible package (10) according to claim 1, wherein said weakening portion includes a line of weakness (106) extending along at least the portion of said fastener tracks (26, 28).
  3. A reclosable flexible package according to claim 1 or claim 2, wherein said line of weakness (106) extends along the substantial entirety of said fastener tracks (26, 28).
  4. A reclosable flexible package according to any one of claims 1 to 3, wherein said line of weakness (106) extends across substantially the entire extent of said reclosable flexible package (10).
  5. A reclosable flexible package according to any one of claims 1 to 4, wherein said weakening portion (106) includes a tear-start feature (120) formed in one side of said reclosable flexible package (10) to initiate tearing of said reclosable flexible package (10).
  6. A reclosable flexible package according to claim 5, further comprising a line of weakness (106) extending along said fastener tracks (26, 28), cooperating with said tear-start feature (120) to tear said reclosable flexible package (10), allowing said shroud (126) to be removed from the remainder of said reclosable flexible package.
  7. A method of making a reclosable, flexible package (10) for a non-flowable product (150), comprising:
    - providing a sheet of film material (100) including front and rear panels (12, 14);
    - providing first and second interlocking fastener tracks (26, 28) configurable between closed and open positions;
    - providing a slider (30);
    - attaching the slider (30) to said first and said second interlocking fastener tracks (26, 28) for sliding along said tracks (26, 28) to move said interlocking fastener tracks (26, 28) between said open and said closed positions;
    - said slider (30) and said first and said second interlocking fastener tracks (26, 28) together comprising a fastener assembly (110);
    - attaching said fastener assembly (110) to one of said front and said rear panels;
    - placing the non-flowable product (150) on one (12) of said front and said rear panels (12, 14);
    - folding said sheet (100) to place said front and said rear panels (12, 14) in overlying relationship;
    - securing said fastener tracks (26, 28) to said front and said rear panels (12, 14); and
    - forming peripheral seals (20, 22, 124, 160) joining the top and bottom edges and said sides of said front and said rear panels (12, 14).
  8. A method according to claim 7, wherein the step of providing a sheet (100) comprises the step of providing a roll (102) of sheet material and severing a sheet portion (100) from said roll (102).
  9. A method according to claim 7 or claim 8, further comprising the step of forming weakening portions (106) extending between the side seals (20, 22) of said front and said rear panels (12, 14).
  10. A method according to claim 9 wherein said step of forming the weakening portions (106) is carried out before said sheet portion (100) is cut from said roll (102).
  11. A method according to claim 9 or claim 10, wherein folding said sheet (100) places the weakening portions (106) in said front and said rear panels (12, 14) in overlying relationship.

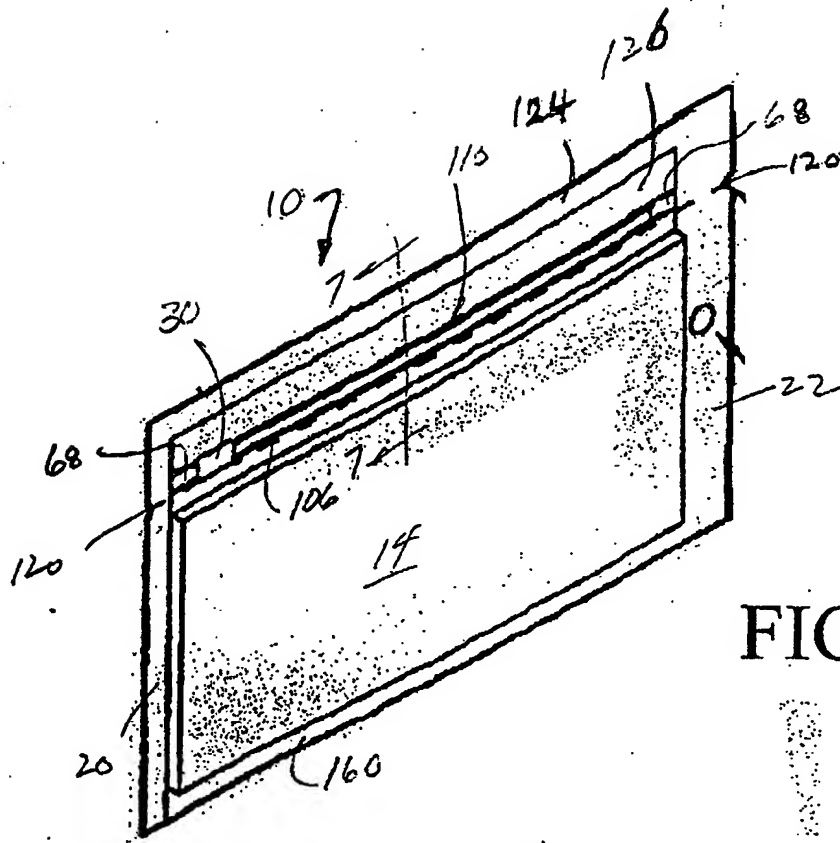


FIG. 1

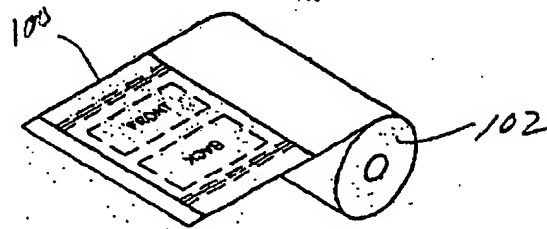


FIG. 2

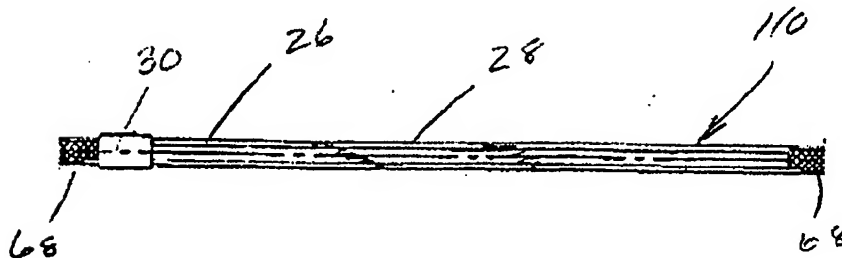


FIG. 3

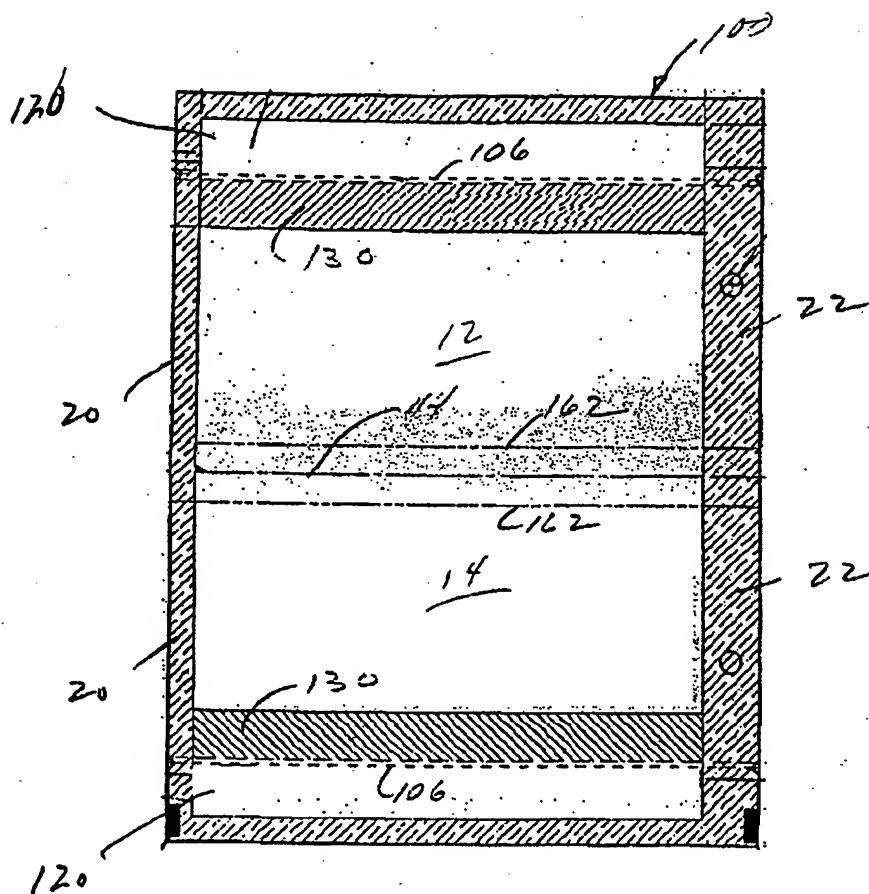


FIG. 4

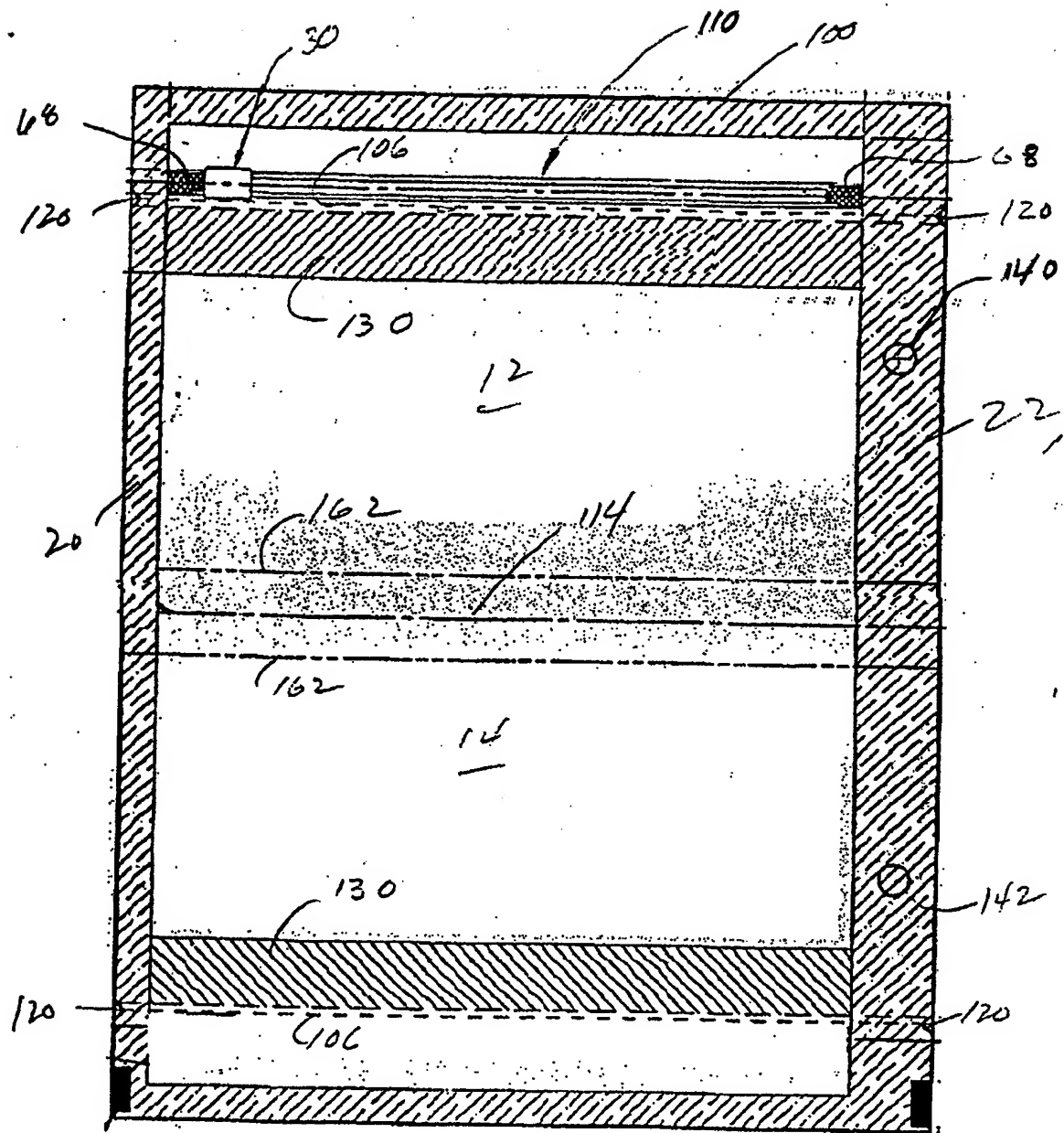


FIG. 5



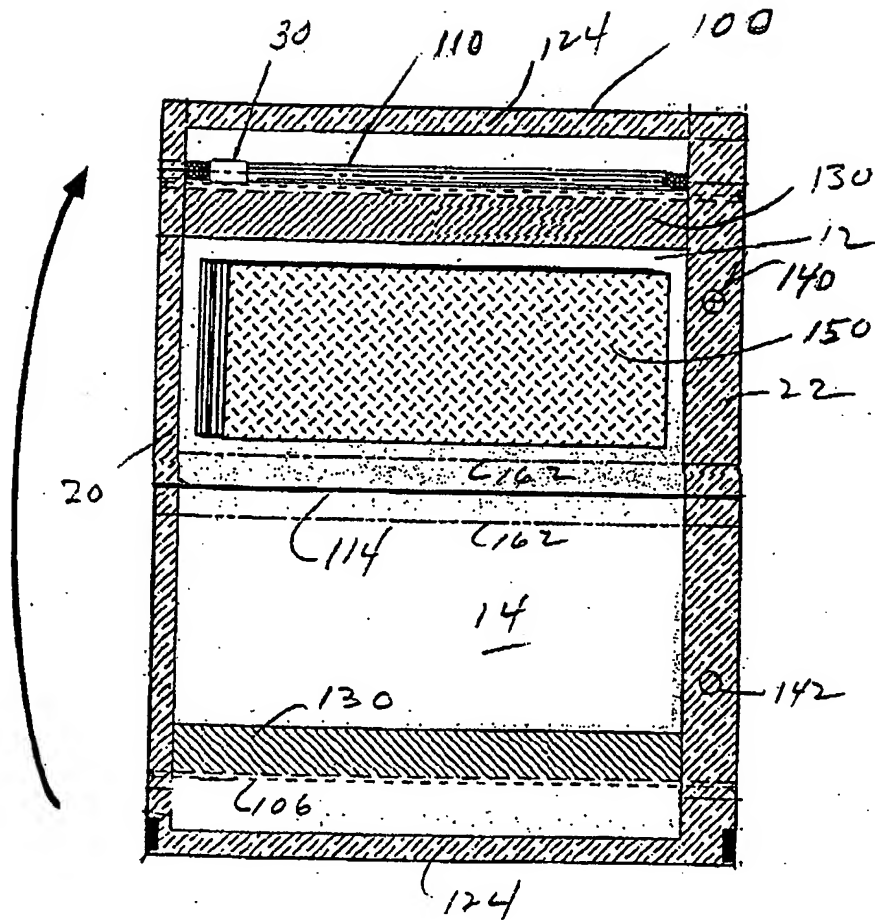


FIG. 6

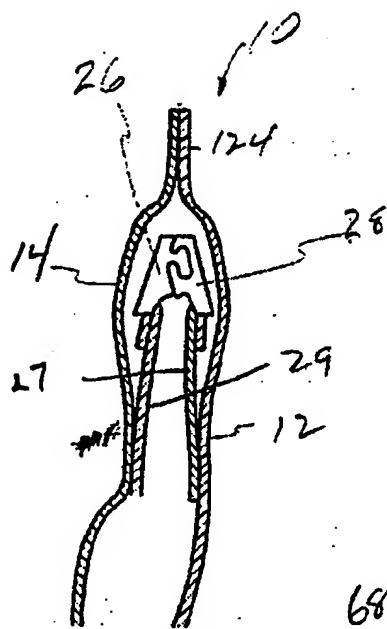


FIG. 7

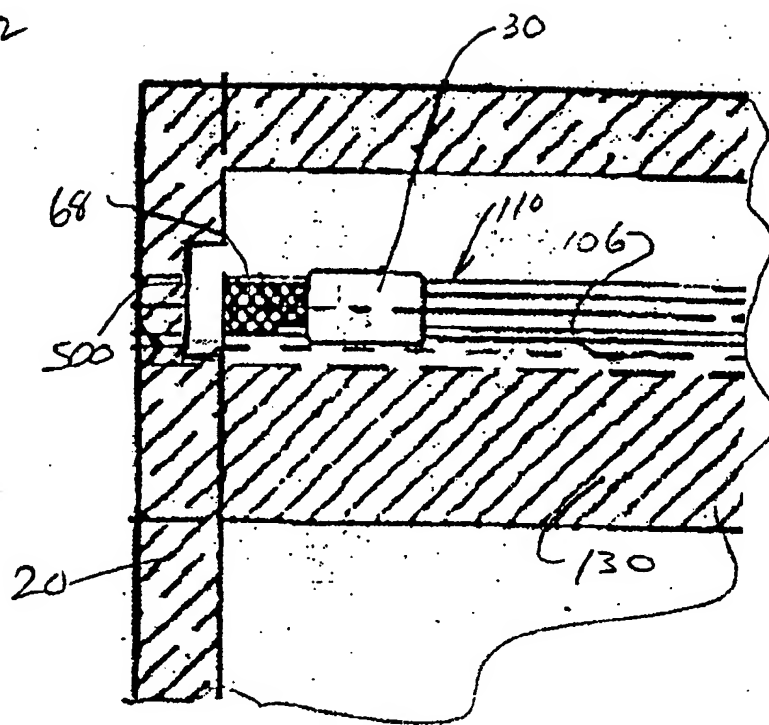


FIG. 8

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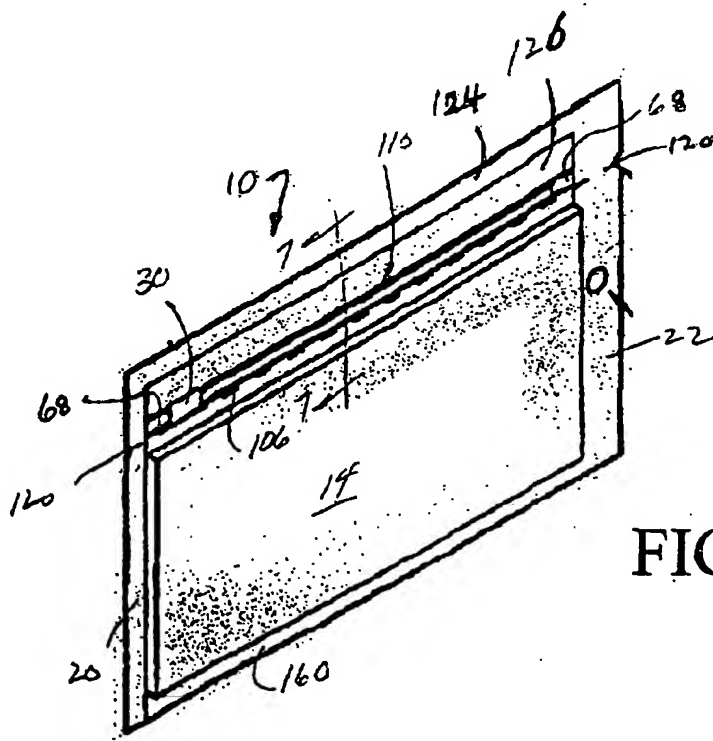


FIG. 1



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# EUROPEAN SEARCH REPORT

Application Number  
EP 03 25 3141

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 2002/037115 A1 (KINIGAKIS ET AL.) 28 March 2002 (2002-03-28) * page 2, paragraph 42 - page 6, paragraph 81; figures *	1-11	B65D33/25
X	US 2001/017950 A1 (STRAND ET AL.) 30 August 2001 (2001-08-30) * page 7, paragraph 118 - page 8, paragraph 129; figures 1-8 * * page 10, paragraph 153 - paragraph 157; figures 30-36 *	1-11	
X	WO 01 53158 A (REYNOLDS CONSUMER PROD) 26 July 2001 (2001-07-26) * page 4, line 25 - page 8, line 9; figures 1,2 *	1-11	
A	US 2001/039235 A1 (BUCHMAN) 8 November 2001 (2001-11-08) * page 2, paragraph 25 - page 4, paragraph 56; figures *	1-11	
A	US 5 713 669 A (VANDERLEE DAVID G ET AL) 3 February 1998 (1998-02-03) * the whole document *	1-11	<div>TECHNICAL FIELDS SEARCHED (Int.Cl.7)</div> <div>B65D</div>
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 19 November 2003	Examiner Olsson, B
<div>CATEGORY OF CITED DOCUMENTS</div> <div> X : particularly relevant if taken alone  Y : particularly relevant if combined with another document of the same category  A : technological background  O : non-written disclosure  P : intermediate document </div>		<div> T : theory or principle underlying the invention  E : earlier patent document, but published on, or after the filing date  D : document cited in the application  L : document cited for other reasons  &amp; : member of the same patent family, corresponding document </div>	

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
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19-11-2003

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2002037115 A1	28-03-2002	US 6357914 B1	19-03-2002
		CA 2381874 A1	18-10-2002
		EP 1251075 A2	23-10-2002
		US 2002154836 A1	24-10-2002
		BR 0106827 A	21-05-2002
		CA 2357591 A1	22-03-2002
US 2001017950 A1	30-08-2001	US 6360513 B1	26-03-2002
		AU 7584900 A	14-05-2001
		CA 2395947 A1	10-05-2001
		EP 1263655 A1	11-12-2002
		WO 0132521 A1	10-05-2001
		US 2003113415 A1	19-06-2003
		US 2001017947 A1	30-08-2001
		US 2003072502 A1	17-04-2003
		US 2003072851 A1	17-04-2003
		US 2003072503 A1	17-04-2003
		US 2003096042 A1	22-05-2003
		US 2003072504 A1	17-04-2003
		US 2003072852 A1	17-04-2003
		US 2002015537 A1	07-02-2002
WO 0153158 A	26-07-2001	US 6273607 B1	14-08-2001
		US 6290390 B1	18-09-2001
		US 6347885 B1	19-02-2002
		US 6290391 B1	18-09-2001
		CA 2397624 A1	26-07-2001
		EP 1248732 A2	16-10-2002
		JP 2003520160 T	02-07-2003
		WO 0153158 A2	26-07-2001
		US 2002076122 A1	20-06-2002
		US 2003021499 A1	30-01-2003
		US 2003185945 A1	02-10-2003
		CA 2331269 A1	18-07-2001
		EP 1129955 A2	05-09-2001
		JP 2001247137 A	11-09-2001
US 2001039235 A1	08-11-2001	US 6293896 B1	25-09-2001
		US 2003145559 A1	07-08-2003
		EP 1099636 A2	16-05-2001
		JP 2001205716 A	31-07-2001
US 5713669 A	03-02-1998	AT 229761 T	15-01-2003
		AU 723617 B2	31-08-2000
		AU 5002097 A	29-06-1998
		DE 69718057 D1	30-01-2003

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

EP 03 25 3141

19-11-2003

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5713669	A	DE 69718057 T2	30-04-2003
		DK 961557 T3	17-02-2003
		EP 0961557 A1	08-12-1999
		ES 2188922 T3	01-07-2003
		JP 2001505853 T	08-05-2001
		PT 961557 T	30-04-2003
		WO 9824339 A1	11-06-1998
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